In the latter case, however, there are two of the twenty-two of Pogson's stars which are missing in the atlas. The comparison would be quite different for Series IV. (in which *R Cassiopeiæ* occurs) and Series V. of the atlas, which are adapted to variables of brighter minima. It was unfortunate in Pogson's plan of work that it comprehended an area as large as 80′ square for the faintest stars, and that it was applied indiscriminately to variables of bright and faint minima. As a reward for his untiring labour Mr. Pogson had deserved to see his work in print and bear fruit in the hands of others. It is to be hoped that this work may see the light yet in some shape and become useful to the science of variable stars.

Georgetown College Observatory:
1901 *March* 19.

Variation of R Horologii during 1900.
By Alex. W. Roberts, D.Sc.

The variation of this long-period variable during 1900 is so remarkable as to call for special notice.

As a rule the star at a maximum is slightly brighter than the 6th mag., but last year it reached the 4th mag. at its maximum phase.

In the accompanying plate (plate 11) is given the full light curve of the star as obtained from the observations made during 1900. The full period of the star is 408 days, but the portion of the curve on the plate demonstrates sufficiently the form of the light curve.

It will be seen from this curve that the light changes extend over seven magnitudes. This means that at its max. on 1900 July 10 *R Horologii* was at least 650 times brighter than it was at its minimum on 1900 February 2. It would be an advance of more than ordinary importance if we could determine how much hotter *R Horologii* was on 1900 July 10 as compared with 1900 February 2.

Indeed, one is convinced that the secret of long-period variation will be kept until some discovery is made which will enable us to deal with heat rays as we do with light rays.

Lovedale: 1901 *March* 13.

A Method of Mechanically Compensating the Rotation of the Field of a Siderostat. By H. C. Plummer, M.A.

1. The compensation of the rotation of the field of a siderostat, which is necessary for photographic purposes, can be effected doubtless in a great variety of ways. Three methods of achieving this object have been suggested by Professor Turner in the *Monthly Notices* for 1901 January. The third method is particularly elegant; but it is possible, I think, to go still further in the direction of mechanical simplicity. That this is the case I hope the device to be described in this note will make clear.

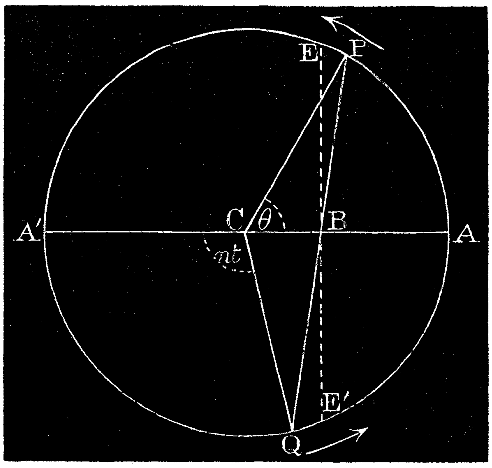

Fig. 1.

2. Let C be the centre of the circle $x^2+y^2=a^2$, and AA′ a diameter. If ACP $=\theta$ and ACQ $=\phi$ (fig. 1), both angles being measured in the same direction, the equation of PQ is

$$x \cos \tfrac{1}{2}(\theta+\phi)+y \sin \tfrac{1}{2}(\theta+\phi)=a \cos \tfrac{1}{2}(\theta-\phi).$$

Hence if PQ cuts AA′ in B, and CB $=b$

$$\frac{b}{a}=\frac{\cos \frac{1}{2}(\theta-\phi)}{\cos \frac{1}{2}(\theta+\phi)}=\frac{1+\tan \frac{1}{2}\theta \tan \frac{1}{2}\phi}{1-\tan \frac{1}{2}\theta \tan \frac{1}{2}\phi}$$

$$\therefore \tan \tfrac{1}{2}\theta \tan \tfrac{1}{2}\phi=-\frac{a-b}{a+b}$$

Let now ACQ $=\phi=\pi+nt$.

$$\therefore \tan \tfrac{1}{2}\theta=\frac{a-b}{a+b}\tan \tfrac{1}{2}nt=\mathrm{K} \tan \tfrac{1}{2}nt$$

if $\dfrac{b}{a}=\dfrac{1-\mathrm{K}}{1+\mathrm{K}}$. But the rotation which is to be compensated is given by the equation

$$\tan \tfrac{1}{2}\theta=\mathrm{K} \tan \tfrac{1}{2}nt$$